REMARKS

The Final Office Action mailed April 3, 2009, has been received and reviewed. Claims 1-6, 11-14, 16, 18-23, 27-31, 33, 35-40 and 44-50 are pending in the subject application. All pending claims stand rejected. In particular, claims 1-6, 11-14 and 16 stand rejected under 35 U.S.C. § 112, while all pending claims 1-6, 11-14, 16, 18-23, 27-31 and 33 stand rejected under 35 U.S.C. § 103(a). In response, it is proposed that each of independent claims 1, 18, and 35 be amended as set forth herein, while claim 19 be canceled. As such, upon entry of this Reply, the amendments will become actual and entered amendments. Claims 1-6, 11-14, 16, 18, 20-23, 27-31, 33, 35-40, and 44-50 will remain pending. It is submitted that no new matter has been added by way of the present amendments. Reconsideration of the subject application is respectfully requested in view of the proposed amendments and the following remarks.

Support for Claim Amendments

Independent claim 1 has been amended herein to recite a clarification of the process of providing information about the risk of an atypical clinical event based upon genetic information. In particular, the clarified process now recites the step of "identifying each of the genes associated with the clinical agent by comparing the identifier of the clinical agent received from the clinician to a first data set containing agent-gene associations," where "the associated genes are likely to interact with the clinical agent to result in an atypical clinical event." Support for these claim amendments may be found in the Specification, for example, at paragraph [0034], and at Table 1.

Further, claim 1 has been amended to include an additional procedure related to the retrieval of a "genetic test result value" for use in determining whether a potential polymorphism value may exist. Specifically, the new process of retrieval involves the steps of "automatically obtaining a genetic test result value for the associated gene of a person," where

automatically obtaining comprises "(a) receiving identification of the person to whom the clinical agent is to be administered and proper authorization to access an electronic medical record (EMR) of the person," and "(b) utilizing the identification and the proper authorization to access patient information within the EMR of the person stored within a comprehensive healthcare system." "[W]hen the patient information comprises the genetic test result value for the associated gene of a person," the process of retrieval includes the step of "comparing the genetic test result value to the second data set containing one or more polymorphism values associated with one or more atypical clinical events for the clinical agent." Otherwise, the process of retrieval is guided to the step of "automatically ordering a test to determine the genetic test result value for the associated gene of a person when the test is available and is authorized by a clinician." Support for these claim amendments may be found in the Specification, for example, at paragraphs [0036] – [0038], and at FIG. 2, reference numerals 40 and 42.

Independent claim 18 has been amended herein to recite new language that features the criteria of "dosage" when determining whether to administer the clinical agent to the patient. In particular, the new claim language includes "a receiving component that receives from a clinician clinical agent information, the clinical agent information including an identifier of a specific clinical agent and a dosage of the specific clinical agent," and "a third determining component that, incident to determining that the genetic test result value correlates to one or more of the one or more polymorphism values, utilizes the second data set to determine whether a risk of damage from not administering the clinical agent is greater than the risk of damage by lowering the dosage of the clinical agent, and that prescribes a lower dosage of the clinical agent when the risk of damage is less than not administering the clinical agent." Support for this amendment may be found in the Specification, for example, at paragraphs [0032] and [0053].

Independent claim 35 has been amended herein to refine the process of calculating the likelihood that a person displays a genetic mutation. In particular, the refined process has removed the option of using "demographic information associated with the person" to calculate the likelihood that the person displays a genetic mutation, and now focuses on accessing "genetic variability of the gene within the general population." Although no support for this reduction in claim language is necessary, an exemplary portion of the Specification that discloses calculating a probability of a genetic mutation based on gene variability in the general population occurs at paragraph [0049].

In general, proposed amendments to the claimed subject matter are not "new matter" within meaning of 35 U.S.C. § 132, unless they disclose an invention, process, or apparatus not theretofore described. Further, if later-submitted material simply clarifies or completes prior disclosure, it cannot be treated as "new matter."[1] By disclosing in a patent application a device that inherently performs a function or has a property, operates according to a theory or has an advantage, "a patent application *necessarily discloses* that function, theory or advantage, even though it says nothing explicit concerning it" (emphasis added).[2] The application may later be amended to recite the function, theory or advantage without introducing prohibited new matter.[3] Accordingly, because these proposed amendments are explicitly discussed, and/or inherent to, the procedure of providing information about the risk of an atypical clinical event based upon genetic information, as memorialized in the Detailed Description, the newly recited subject matter is encompassed by the scope of the Specification and does not constitute new matter.

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[1] *Triax Co. v Hartman Metal Fabricators, Inc.,* 479 F2d 951 (1973, CA2 NY); cert. denied, 94 S. Ct. 843 (1973).
[2] *See* MPEP § 2163.07; *In re Reynolds*, 443 F.2d 384 (CCPA 1971); *In re Smythe*, 480 F. 2d 1376 (CCPA 1973).
[3] *See id.*

Rejections based on 35 U.S.C. § 112

Claims 1-6, 11-14 and 16 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description. In particular, it is stated in the Office Action that claim 1 contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. As more fully described below, it is respectfully submitted that claim 1, as amended, is now directed to statutory subject matter.

In particular, the Office contends that "providing proper authorization to access a second data set within the EMR of a person" is not supported by the Specification. In response, independent claim 1 is amended herein to recite a process of automatically obtaining a genetic test result value for the associated gene of a person, where automatically obtaining comprises "(a) receiving identification of the person to whom the clinical agent is to be administered and proper authorization to access an electronic medical record (EMR) of the person," and "(b) *utilizing the identification and the proper authorization to access patient information within the EMR* of the person stored within a comprehensive healthcare system" (emphasis added), and where the "patient information comprises the genetic test result value for the associated gene of a person."

It should be noted that proposed amendments to the claimed subject matter are not "new matter" within meaning of 35 U.S.C. § 132 unless they disclose an invention, process, or apparatus not theretofore described. Further, if later-submitted material simply clarifies or completes prior disclosure, it cannot be treated as "new matter."[4]

[4] *Triax Co. v Hartman Metal Fabricators, Inc.,* 479 F2d 951 (1973, CA2 NY); cert. denied, 94 S. Ct. 843 (1973).

The Office concedes that support for the process of requiring authorization to access "particular patient information," "an electronic medical record," and/or "a patient based data structure" that associates a "genetic test value result to a patient" is found in the Specification. Further, the Specification at paragraph [0037] initially discloses that "if an association does exist, at step 40, the system determines if a genetic test result value is stored for the gene or genes associated with the agent." Paragraph [0037] continues to disclose that "the system would access the patient's electronic medical record [EMR] to determine if the record contained a medical test value," and "the patient may be identified at step 29 [FIG. 2] along with the clinical agent, or may be input at step 40 when the patient's data becomes relevant." Finally, paragraph [0037] states that the method above "may include steps requiring authorization of the user to access the particular patient information." As such, it is inherent in the Specification, if not explicitly stated, that (a) an identification of the patient and (b) the proper authorization may be provided to access patient information within the EMR.

As such, it is respectfully submitted that amended claim 1 is directed toward statutory subject matter. Further, each of claims 2-6, 11-14, and 16 are believed to be in condition for allowance based, in part, upon their dependency from independent claim 1, and such favorable action is respectfully requested.

Rejections based on 35 U.S.C. § 103

A.) Applicable Authority

The teachings or suggestions to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicant's disclosure.[5] To establish a *prima facie* case of obviousness, all the claim limitations must be taught by the prior

[5] *See* MPEP § 2143; *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

art.[6] "All words in a claim must be considered in judging the patentability of that claim against the prior art."[7]

B.) Obviousness Rejection Based upon U.S. Publication No. 2002/0110823 to Hogan

Claims 1-6, 11-14, 16, 18-23, 27-31, and 33 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Publication No. 2002/0110823 to Hogan (hereinafter the "Hogan reference") in view of Official Notice. As the Hogan reference and the knowledge of one of ordinary skill in the art at the time of invention, whether taken alone or in combination, fail to teach or suggest all of the limitations of the rejected claims, Applicants respectfully traverse this rejection, as hereinafter set forth. Further, claim 19 has been canceled by way of the present communication and, accordingly, the rejection of this claim has been rendered moot.

Independent claim 1 has been amended herein to recite a clarification of the process of providing information about the risk of an atypical clinical event based upon genetic information. In particular, the clarified process now recites the step of "identifying each of the genes associated with the clinical agent by comparing the identifier of the clinical agent received from the clinician to a first data set containing agent-gene associations," where "the associated genes are likely to interact with the clinical agent to result in an atypical clinical event." In this way, upon determining which medical procedure the patient requires, those clinical agent(s) involved with the medical procedure are entered to a "first data set containing agent-gene associations," and each of the genes associated with the entered clinical agent(s) are identified. Advantageously, this process allows the clinicians to acquire a comprehensive list of genes that may be relevant to a particular medical procedure.

[6] MPEP § 2143.03; *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974).
[7] MPEP § 2143.03; *In re Wilson*, 57 C.C.P.A. 1029, 1032 (1970)

The Office indicates that that the Hogan reference discusses at paragraphs [0007] – [0009] that certain genes are associated with particular anesthetic drugs.[8] However, the Hogan reference at paragraphs [0007] – [0009] discloses that certain enzymes, which metabolize local anesthetics, can have poor reactions when mutations occur. This disclosure does not explicitly state or inherently consider "identifying each of the genes associated with the clinical agent" by comparing the identifier of the clinical agent received from the clinician to a first data set containing agent-gene associations.

Next, the Office indicates that the disclosure of the Hogan reference at FIGS. 4 and 5 implies that when determining if a gene is associated with a particular clinical agent that it is through comparing the identifier of the clinical agent to a data set comprising agent-gene associations.[9] FIG. 4 of Hogan simply provides a table by which individual genes are listed with corresponding complications and interventions, while FIG. 5 of Hogan is a table of assays that may be used to detect variants in certain genes. Accordingly, the configuration of FIG. 4 disallows its use in identifying *each gene* that is likely to interact with a clinical agent (resulting in an atypical clinical event) upon entering the clinical agent, while FIG. 5 is not relevant to the identification of genes that interact with clinical agents. Thus, FIGS. 4 and 5 do not explicitly state or inherently consider "identifying each of the genes associated with the clinical agent" by comparing the identifier of the clinical agent received from the clinician to a first data set containing agent-gene associations.

Further, the Office indicates that paragraphs [001] – [0013] of the Hogan reference discuss "genomic screening" of a patient prior to a surgical procedure in order to

[8] Office Action at pg. 7, ll. 9-12.
[9] *Id.* at pg. 7, ll. 12-17.

obtain a genomic profile.[10] Genomic screening is described in Hogan as preoperative screening for markers by providing an assay for detecting two or more genetic markers and subjecting a sample (e.g., tissue of the patient) to the assay to generate a genomic profile.[11] Accordingly, this process of applying an assay to a tissue sample to find genetic markers does not inherently teach "identifying each of the genes associated with the clinical agent" by comparing the identifier of the clinical agent received from the clinician to a first data set containing agent-gene associations. Moreover, the application of an assay to a tissue sample will not reveal "each of the genes associated with the clinical agent" as the assay is geared to revealing a general profile as opposed to genes that "likely to interact with the clinical agent to result in an atypical clinical event."

Essentially, the process of the Hogan reference involves the following steps performed in the order that they are listed: (1) attain a tissue sample, (2) apply an assay to the tissue sample to generate a genomic profile, (3) detect variant alleles of genes from the genomic profile, and (4) rely on the clinician to adjust a surgical procedure based on the variant alleles.[12] This process taught by Hogan relies on the clinician to pull from the genomic profile information that s/he deems to be relevant and to adjust the surgical procedure using this relevant information. These steps (1)-(4) do not inherently consider the steps recited by amended claim 1. In particular, the steps (1)-(4) of the Hogan process do not teach, first, receiving from a clinician clinical agent information, and second, identifying each of the genes associated with the clinical agent by comparing the identifier of the clinical agent received from the clinician to a first data set containing agent-gene associations. That is, the claims recite that a clinical agent is initially received and input into a table and then the table identifies as an output all the genes that

[10] *Id.*
[11] *See Hogan reference* at ¶¶ [0011] – [0013].

interact with the clinical agent. As such, the claimed method results in a comprehensive list of all genes interacting with a clinical agent, while step (4) of Hogan relies on the clinician to adjust a surgical procedure based on the assay-revealed variant alleles, which may not consider all the genes associated with the procedure due to (a) the limited scope of what the assay reveals, and (b) the imperfect recollection of the clinician.

Further, claim 1 has been amended to include an additional procedure related to the retrieval of a "genetic test result value" for use in determining whether a potential polymorphism value may exist. Specifically, the new process of retrieval involves the steps of "automatically obtaining a genetic test result value for the associated gene of a person," where automatically obtaining comprises "(a) receiving identification of the person to whom the clinical agent is to be administered and proper authorization to access an electronic medical record (EMR) of the person," and "(b) utilizing the identification and the proper authorization to access patient information within the EMR of the person stored within a comprehensive healthcare system." "[W]hen the patient information comprises the genetic test result value for the associated gene of a person," the process of retrieval includes the step of "comparing the genetic test result value to the second data set containing one or more polymorphism values associated with one or more atypical clinical events for the clinical agent." Otherwise, the process of retrieval is guided to the step of "*automatically ordering a test to determine the genetic test result value for the associated gene of a person when the test is available and is authorized by a clinician*" (emphasis added). In this way, the administration of a test on a patient to ascertain a genetic test result value is conditioned on the following four recited criteria: (a) determining that a gene is associated with the clinical agent, (b) determining that patient

[12] *Id.* at ¶¶ [0015] – [0019].

information in an EMR does not comprise a genetic test result value for the associated gene, (c) determining the test is available, and (d) determining the test is authorized by a clinician.

The Hogan reference does not describe administering a test on the patient to gather a genetic test result value only after the criteria (a)-(d) have been met. Instead, as discussed above, the Hogan reference initially applies an assay to the tissue sample to generate a genomic profile (i.e., genetic test) without consideration of whether a particular gene is associated with a clinical agent involved in a medical procedure. Further, the Hogan reference does not explicitly describe exploring a patient EMR prior to approving the application of an assay to a tissue sample. As such, each of the four criteria for administering a test to gather a genetic test result value are not explicitly stated or inherently considered by Hogan. Moreover, because the processes of Hogan rely first and foremost on creating a genomic profile from the application of the assay, conditions on when/if to apply the assay are not implicit in the cited portions of the Hogan reference.

In view of the above, it is respectfully requested that the 35 U.S.C. § 103(a) rejection of claim 1 be withdrawn. Further, claim 1 is believed to be in condition for allowance and such favorable action is respectfully requested. Each of claims 2-6, 11-14, and 16 depend, either directly or indirectly, from independent claim 1. As such, these claims are believed to be in condition for allowance at least by virtue of their dependency.[13]

Independent claim 18 has been amended herein to recite new language that features the criteria of "dosage" when determining whether to administer the clinical agent to the patient. In particular, the new claim language includes "a receiving component that receives from a clinician clinical agent information, the clinical agent information including an identifier of a specific clinical agent *and a dosage of the specific clinical agent*," and "a third determining

component that, incident to determining that the genetic test result value correlates to one or more of the one or more polymorphism values, *utilizes the second data set to determine whether a risk of damage from not administering the clinical agent is greater than the risk of damage by lowering the dosage of the clinical agent, and that prescribes a lower dosage of the clinical agent when the risk of damage is less than not administering the clinical agent*" (emphasis added). In this way, the method recited in claim 18 performs a "risk of damage" balancing analysis to determine (based on the dosage of a clinical agent being input to the second data set) whether to prescribe a lower dosage of the clinical agent or whether to entirely forego use of the clinical agent.

The Office contends that the Hogan reference at paragraphs [0005], [0008], and [0138] discusses assessing the dosages associated with the clinical agents.[14] However, the Hogan reference does not explicitly or inherently teach utilizing the second data set to determine whether a risk of damage from not administering the clinical agent is greater than the risk of damage by lowering the dosage of the clinical agent. Further, the Hogan reference does not explicitly or inherently teach (a) "prescrib[ing] a lower dosage of the clinical agent when the risk of damage is less than not administering the clinical agent," or (b) "when the when the risk of damage of not administering the clinical agent is less than lowering the dosage of the clinical agent, display[ing] in a notification window a warning to the clinician that the clinical agent received from the clinician should not be administered to the person." Instead, the Hogan reference teaches that the dose of a drug depends on the surgical procedure,[15] that complications during medical procedures can be avoided by adjusting dosage,[16] and that adverse drug reactions

[13] *See* 37 C.F.R. § 1.75(c) (2006).
[14] Office Action at pg. 11, ll. 11-13.
[15] *See Hogan reference* at ¶ [0005].
[16] *Id.* at ¶ [0008].

can easily be avoided by substituting other medications or adjusting dosages.[17] These broad generalizations that indicate a dosage may sometimes be adjusted do not implicitly consider the specific recitation of inputting a dosage of a clinical agent into a second data set and utilizing the second data set to determine whether a risk of damage from not administering the clinical agent is greater than the risk of damage by lowering the dosage of the clinical agent. Further, the broad generalizations of the Hogan reference do not implicitly consider the specific recitation of the actions (a) and (b) immediately above that are taken upon assessing the risk of damage.

As discussed above, claim 18 recites actions taken upon assessing the risk of damage. In particular, one of the actions involves "display[ing] *in a notification window a warning* to the clinician that the clinical agent received from the clinician should not be administered to the person upon a determination that the genetic test result value for the person correlates to one or more of the polymorphism values associated with one or more atypical clinical events," where "*the notification window surfaces a selectable area for accessing information regarding the one or more of the polymorphism values*," and where "*the notification window displays an alternative clinical agent that does not correlate with the genetic test result value*" (emphasis added). In this way, the notification window is configured to present to a user two specific items: (a) a selectable area for accessing information regarding polymorphism values, and (b) an alternative clinical agent that does not correlate with the genetic test result value.

The Office indicates that the Hogan reference at paragraph [0190] teaches risk assessment for various treatment options are displayed to a clinician, and at paragraphs [0189] – [0193] teaches the use of computers for performing the instant invention. Further, the Office indicates that these general disclosures of computers imply the specific steps of claimed in claim

[17] *Id.* at ¶ [0138].

18.[18] However, these cited portions of the Hogan reference do not teach the very specific notification window that concomitantly displays the items (a) and (b) listed immediately above. Instead, the general discussion of Hogan at paragraph [0190] describes displaying the genomic profile in a suitable format. This genomic profile is raw data, while the notification window of the claimed invention displays "alternative clinical agents" that are selected via analysis of the entered clinical agents, the associated genes, and the polymorphism values and the genetic test result values of a patient. Because the type of information being displayed in the Hogan reference is very distinct from the type of information being displayed in the notification window of claim 18, the disclosure of Hogan cannot be considered to imply the claimed configuration of the notification window of claim 18.

In view of the above, it is respectfully requested that the 35 U.S.C. § 103(a) rejection of claim 18 be withdrawn. Further, claim 18 is believed to be in condition for allowance and such favorable action is respectfully requested. Each of claims 20-23, 27-31, and 33 depend, either directly or indirectly, from independent claim 18. As such, these claims are believed to be in condition for allowance at least by virtue of their dependency.[19]

C.) Obviousness Rejection Based upon the Hogan Reference in view of U.S. Patent No. 6,219,674 to Classen

Claims 35-40 and 44-50 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Hogan reference in view of U.S. Patent No. 6,219,674 to Classen (hereinafter the "Classen reference"). As the Hogan reference and the Classen reference, whether taken alone or in combination, fail to teach or suggest all of the limitations of the rejected claims, Applicants respectfully traverse this rejection, as hereinafter set forth.

[18] Office Action at pg. 8, ll. 8-16.

Independent claim 35 has been amended herein to refine the process of calculating the likelihood that a person displays a genetic mutation. In particular, the refined process has removed the option of using "demographic information associated with the person" to calculate the likelihood that the person displays a genetic mutation, and now focuses on accessing "genetic variability of the gene within the general population." In this way, when a genetic test result value cannot be obtained, a likelihood that the person displays a genetic mutation is calculated based on genetic variability of the gene within the general population.

The Office indicates that the primary reference, Hogan, does not explicitly teach the step of using genetic variability of the gene within the general population to calculate the likelihood that a person displays a genetic mutation. However, the Office states that Classen teaches that extracted data can be analyzed to calculate risk for an individual, where the analyzed data pertains to persons with similar characteristics (e.g., race, age, and gender).[20]

Classen, as cited, does not teach using genetic variability of the gene within the *general population* to calculate the likelihood that a person displays a genetic mutation. Instead, the Classen reference describes using demographic information of a patient to access statistically relevant information of a "subgroup" in which the patient is a member. The cited portions of the Classen reference do not account for a situation where demographic information is unavailable such that a subgroup of the patient cannot be determined. Moreover, the cited portions of the Classen reference do not describe or suggest using the "genetic variability of the gene within the general population to calculate the likelihood that a person displays a genetic mutation." Accordingly, the Classen reference fails to cure the stated deficiencies of the primary reference, Hogan.

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[19] *See* 37 C.F.R. § 1.75(c) (2006).
[20] Office Action at pg. 14, ll. 19-22.

In view of the above, it is respectfully requested that the 35 U.S.C. § 103(a) rejection of claim 35 be withdrawn. Further, claim 35 is believed to be in condition for allowance and such favorable action is respectfully requested. Each of claims 36-40 and 44-50 depend, either directly or indirectly, from independent claim 35. As such, these claims are believed to be in condition for allowance at least by virtue of their dependency.[21]

Further, claim 35 recites the feature of "*constructing a message* to communicate the calculated likelihood of the genetic mutation and any atypical clinical events that are associated therewith." The Office indicates that the primary reference, Hogan, does not explicitly teach this feature. However, the Office does not cite to a reference that does teach this feature of "constructing a message" to communicate the information above. Accordingly, for at least this reason, a *prima facie* case of obviousness is not properly set forth by the Office, and, as a matter of law, the § 103(a) rejection of claim 35, and claims that depending therefrom, must be withdrawn.

[21] *See* 37 C.F.R. § 1.75(c) (2006).

CONCLUSION

For at least the reasons stated above, upon entry of the amendments, it is believed that claims 1-6, 11-14, 16, 18, 20-23, 27-31, 33, 35-40 and 44-50 will be in condition for allowance. As such, Applicants respectfully request entry of the amendments, withdrawal of the pending rejections and allowance of the claims. If any issues remain that would prevent issuance of this application, the Examiner is urged to contact the undersigned – 816-474-6550 or btabor@shb.com (such communication via email is herein expressly granted) – to resolve the same.

A Request for Continued Examination Fee is submitted herewith. It is believed that no additional fee is due, however, the Commissioner is hereby authorized to charge any amount required to Deposit Account No. 19-2112, referencing attorney docket number CRNI.114070.

Respectfully submitted,

/BENJAMIN P. TABOR/

Benjamin P. Tabor
Reg. No. 60,741

BPT/tq
SHOOK, HARDY & BACON L.L.P.
2555 Grand Blvd.
Kansas City, MO 64108-2613
816-474-6550